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REMARKS

This application is initially rejected under 35 U.S.C. § 112, first paragraph, for the reasons noted in the official action. The enablement rejection is acknowledged and respectfully traversed in view of the following remarks. In accordance with the Examiner's indication that, "[t]he present specification does not support the termination of the downshifting with an engagement of the clutch and a disengagement of the clutch, as recited in the present claim 12", the Applicant has appropriately rewritten claims 12 and 13 as new claims 23 and 24 to now more clearly recite that there is a specific downshifting operation during which the clutch is maintained in an open (disengaged) state between gear shifts.

Specifically, new claim 23 (based on the subject matter of previous claim 12) now recites the steps of

. . . carrying out a first downshifting operation in a coasting mode;
terminating downshifts in the first downshifting operation by engagement of a clutch located between a vehicle drive motor and the transmission;
determining attainment of a predetermined threshold speed and carrying out a second downshifting operation; and
terminating downshifts in the second downshifting operation with the clutch located between the vehicle drive motor and the transmission *maintained in a disengaged state.* (Emphasis Added).

The subject matter of claim 23 now clearly recites the novel aspects of this invention where the clutch is maintained open and disengaged, i.e., not closed, between downshifts when the speed is below a desired threshold. This is clearly described in the Applicant's specification at least at paragraph 018

Accordingly, counter to the state of the technology, below the stated threshold value for speed, additional downshifting can take place. In the case of these so-called comfort downshifts, however, the clutch is not closed after the

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engagement of a new gear, but is left in an open state. When this is done, the negative effect of the motor braking action being too strong, which is known to the state of the technology, does not occur. In this operation, the gear jumps were fortunately chosen with consideration given to the vehicle delay which, for example, is determined by the measurement of the change of the transmission output shaft speed of rotation.

From this disclosure, and in light of the rewritten claims including the first and second down-shifting operations, the subject matter of the presently claimed invention is believed clear to one of ordinary skill in the art and therefore the enablement rejection under 35 U.S.C. § 112, first paragraph is believed to be overcome. If any further amendment in this regard is believed necessary to place this case in condition for allowance, the Examiner is courteously requested to contact the undersigned representative of the Applicant to discuss the same.

In regards to the specification amendments, the Applicant notes that the German phrase "wahrend einer Schubbetriebsphase" was initially translated as "during a compression braking operation". This phrase is more properly translated as "during a coasting mode". A coasting mode is generally understood by those of skill in the art to occur when a vehicle operator ceases actuation of the throttle so that no fuel is supplied to the engine, but where the engine is still influenced by the vehicle weight, orientation, aspect and driving conditions due to the clutch between the engine and transmission remaining engaged. This is a fuel-savings aspect of contemporary transmissions. Accordingly, the specification and claims are amended to recite this more definitive translation.

Claims 12-22 (now claims 23-33) are next rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for the reasons noted in the official action. The claims 12, 13, 15 and 20 are accordingly rewritten, by the newly add claims, and in accordance with these claims and the discussion relating to the 35 U.S.C. § 112, first paragraph rejection above, the presently pending claims are now believed to particularly point out and

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distinctly claim the subject matter regarded as the invention, thereby overcoming all of the raised § 112, second paragraph, rejections. The rewritten and newly entered claims are directed solely at overcoming the raised indefiniteness rejection(s) and are not directed at distinguishing the present invention from the art of record in this case.

Turning now to the substantive rejections, claims 12-22, now claims 23-33, are rejected, under 35 U.S.C. § 102, as being anticipated by Suzuki '635. The Applicant acknowledges and respectfully traverses the raised anticipatory rejection in view of the following remarks.

It is a well established principal of patent law that, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference". MPEP § 2131, citing *Verdegall Bros. V. Union Oil co. Of Calif.*, 814 F.2d 628, 631 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The Applicant has made a thorough review of Suzuki '635 and notes that not all of the features and steps of the presently claimed invention are set forth in Suzuki '635. Suzuki '635 arguably teaches a vehicle transmission control apparatus that incorporates an electric generator between the transmission and drive wheels of a motor/generator "hybrid" vehicle. This generator converts the kinetic energy of a decelerating vehicle into electric energy which is stored in the battery. Suzuki, column 1, lines 56-59.

Suzuki '635 explains that in the case of a decelerating vehicle, an engine process called "motoring", i.e., sometimes occurs. During this process, the transmission is shifted to a lower gear, which makes the engine race in an effort to match the rolling speed of the decelerating vehicle. While the engine is brought to a matching speed of the vehicle due to the lower gear, friction and drag in the engine work to further slow the vehicle. Suzuki, column 1, line 65 - column 2, line 5.

In many situations, such as the present invention, such "motoring" is beneficial or even necessary when braking or slowing of the vehicle is desired without using the operational

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brakes. As can be seen in paragraphs 007 and 016 of the specification for the present invention, the engine drag, "motoring" (referred to in the Applicant's present specification as "a compression operation phase") is utilized in a coasting mode to slow the vehicle until a predetermined threshold speed is reached. By contrast, "motoring" is antithetical to the purpose of Suzuki '635 in that the friction dissipates the kinetic energy desired by the generator. Column 1, lines 65-37. Whereas in the Applicant's coasting mode "motoring", by down-shift operation at the high end of the gear ratios can provide engine braking, Suzuki '635 specifically discloses the opposite approach, minimizing the friction, engine drag and braking by up-shifting the transmission during deceleration:

[T]he transmission is automatically shifted, upon deceleration of the vehicle, to a highest gear position selected from one or more gear positions which enables the internal combustion engine to maintain its speed at a level not lower than a predetermined lower limit above which the engine can operate by itself. This arrangement...permits the revolution speed of the internal combustion engine to be kept close to the predetermined lower limit, due to the automatic *up-shift action* of the transmission. Thus, the instant arrangement makes it possible to reduce the friction of the internal combustion engine and minimize the energy loss during the regenerative braking, resulting in an increase in the regenerative braking efficiency.

Suzuki '635, column 3, lines 33-41 (emphasis added).

Claim 23 of the present invention, and thus by incorporation claims 24-33, describe a method including the steps, "carrying out a first downshifting operation in a coasting mode; terminating downshifts in the first downshifting operation by engagement of a clutch located between a vehicle drive motor and the transmission". Suzuki '635 discloses an up-shift during deceleration which is of course exactly the opposite of a down shift, and minimizing or eliminating "motoring", i.e., compression braking of the vehicle by the engine speed, all of which is entirely different from the downshifting aspects of the presently claimed invention.

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Observing the applied reference at column 6, lines 57-64 it is important to note that the method described in Suzuki '635 maintains the engine speed above the point where it would add friction to the drive train so that none of the regenerative braking power is lost on the engine

to achieve the objective indicated above, the embodiment is adapted to automatically shift up the transmission 14, upon deceleration of the vehicle 10, to a highest gear position selected from at least one gear-position thereof which enables the engine 12 to maintain its speed at a level not lower than (i.e., at or above) a predetermined lower limit above which the engine 12 can operate by itself (i.e., above which the engine can re-start).

Thus, there is no disclosure, teaching or even a suggestion in this reference relating to the steps of, carrying out a first downshifting operation during a coasting mode and terminating downshifts in the first downshifting operation by engagement of a clutch located between a vehicle drive motor and the transmission; which is currently recited in claim 23 of the presently claimed invention. In fact, Suzuki teaches just the opposite, an up-shift, upon the occurrence of "motoring" or "compression braking" to eliminate any engine compression braking.

Nor is there any disclosure in Suzuki '635 relating to the step of "terminating downshifts in the first downshifting operation by engagement of a clutch located between a vehicle drive motor and the transmission . . ." as recited in claim 23. In fact, again here Suzuki '635 discloses an entirely opposite function and steps from the presently claimed invention as described at column 6, lines 25-30, in Suzuki, "The revolution speed (motoring speed) of the engine 12 can be lowered by *shifting up the transmission 14 to its highest-gear position, rather than by releasing the clutch 14a*, so that the energy loss L3 due to the friction of the engine 12 is reduced, that is, the regenerative braking energy W is increased." (Emphasis Added).

Finally, while Suzuki '635 arguably discloses a clutch 14a disposed between the engine and the transmission, there is little if any disclosure of how this clutch is controlled relative to

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the engine speed other than in general terms as at column 3, lines 60-64 which describe that "... the shift controller operates to release the clutch so as to disconnect the internal combustion engine and the transmission from each other, when the selected highest gear position is the lowest one of the plurality of gear positions of the transmission". Different from this description of opening or releasing the clutch only in the lowest gear position, claim 23 recites the step of "determining attainment of a predetermined threshold speed and carrying out a second downshifting operation; and terminating downshifts in the second downshifting operation with the clutch located between the vehicle drive motor and the transmission maintained in a disengaged state". By way of explanation, in Suzuki '635 while the clutch may of course be open or released in the lowest gear position so the engine can idle without stalling, there can certainly be no further downshifts from the lowest gear position (the starting gear usually) of the transmission. Whereas one of the points of the presently claimed invention is that the Applicant control permits successive downshifts from a higher to a lower gear in the second downshifting operation without closing the clutch.

Additionally, the Applicant has also added new claims 23-25 to further clarify the novel aspects of the present invention and to further distinguish the two distinct downshifting operations required by the Applicant's invention. New independent claim 23 includes the steps of "... carrying out a first downshifting operation in a coasting mode of the automatic transmission from a higher gear to a lower gear by". Here, the coasting mode continues engagement of the clutch so that the engine can do work, for example braking without using fuel which of course increases efficiency. Secondly, in the second downshifting operation the clutch is maintained opened, and the engine is disengaged and thus provides no direct influence over the vehicle movement through successive shifts.

... carrying out a second downshifting operation of the automatic transmission through a succession of downshifts by;

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opening the clutch between the automatic transmission and the vehicle engine;
shifting from the higher gear to the lower gear in the automatic
transmission; and

maintaining the clutch between the automatic transmission and the
vehicle engine in an open state during each successive shift in the second downshifting
operation;

Finally in claim 23 the second downshifting operation is terminated by an indication that positive
drive force is required;

determining a driver desire for positive drive torque; and terminating the
second downshifting operation by closing the clutch between the vehicle engine
and the transmission carrying out the second downshifting operation.

None of these steps pertaining to the down-shifting in the first or second downshifting
operation are disclosed either expressly or inherently in Suzuki '635 and the Applicant believes
the new claims 34, 35 to be allowable for the same or similar reasons as set forth with respect
to claim 23 (based on previous claim 12). If any further amendment to this application is
believed necessary to advance prosecution and place this case in allowable form, the Examiner
is courteously solicited to contact the undersigned representative of the Applicant to discuss the
same.

In view of the above amendments and remarks, it is respectfully submitted that all of the
raised anticipation rejections should be withdrawn at this time. If the Examiner disagrees with
the Applicant's view concerning the withdrawal of the outstanding rejection(s) or applicability
of the Suzuki '635 reference, and in view of the broad generalization at page 5, paragraph 9
of the Official Action regarding anticipation of the previously submitted claims by the entire
Suzuki '635 disclosure, the Applicant respectfully requests the Examiner to indicate the specific
passage or passages, or the drawing or drawings, which contain the necessary teaching,
suggestion and/or disclosure required by case law. As such teaching, suggestion and/or

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disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

In view of the foregoing, it is respectfully submitted that the raised anticipation rejections should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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